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Atari Online News, Etc.
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~ Hackers Announce WW III ~ People Are Talking! ~ Leap Second "Woes"?
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->From the Editor’s Keyboard "Saying it like it is!"
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I apologize for this week’s issue being sent out late this week, but it’s been one of those hectic weeks again. That, and the fact that we had a lot of interesting material this week just managed to put even more demand on time. But, here we are again; I think you’ll enjoy what we have to offer this week!

Until next time...

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->In This Week’s Gaming Section
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- New Nintendo 3DS Coming in February!
UK Man Arrested for X-mas Attacks!
Remembering The Legendary Atari Games!
And much more!

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->A-ONE’s Game Console Industry News
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- The Latest Gaming News!

A New Nintendo 3DS Is Coming in February, But It s Missing Something

Nintendo would like to sell you a new 3DS. Again.

During a broadcast presentation Wednesday, the company unveiled a new version of its 3DS handheld system that addresses one of the biggest complaints about the existing system.

Releasing Feb. 13 for $200, the new system will feature face tracking, allowing players to see the portable s 3D effects regardless of viewing angle. Previously, you had to be looking at the screen directly from the center to get any sort of 3D effect.

The New Nintendo 3DS XL, as it s officially called, will also have a faster processor, a slightly longer battery life, and an additional analog nub on the right side of the system for enhanced controls. It s compatible with all 3DS games, but certain upcoming new games will work only with the new system. Nintendo also promised faster downloads, faster boot-up times, and built-in support for amiibo figures and near-field communications.

There was one curious omission, though. The New 3DS XL will ship without an AC charger. If you want to juice it up, you ll either have to buy one separately or use a charger from an existing 3DS. It s a clear signal that either Nintendo executives believe the market for new 3DS owners at this point is minimal or they ve just lost their minds.

Nintendo will also offer two limited-edition bundles of the New 3DS XL: one with a remastered portable take on the classic The Legend of Zelda: Majora s Mask and one packed with Monster Hunter 4 Ultimate.

Nintendo didn t just talk hardware in Wednesday s presentation. The company gave plenty of updates on its plans for 2015. Among the highlights:

New amiibo figures are on the way. The second big wave of amiibo characters will hit stores March 20, with a redesigned Mario, Peach, Luigi, Yoshi, and Bowser, along with the debut of Toad. They ll launch in conjunction with Mario Party 10 for the Wii U.

Downloadable Wii games are coming to Wii U. You ll finally be able to launch Wii games without switching to Wii mode on your Wii U, as Nintendo will offer downloadable copies of select titles starting today with Super Mario Galaxy 2. Punch-Out!! will follow Jan. 22, and Metroid Prime Trilogy arrives Jan. 29. Pricing for the downloadable games wasn t given. Wii mode will still be an option for physical copies of older games.

Splatoon gets a date, sort of. The ink-based shooter for the Wii U that was so popular at last year s E3 show will finally land on store shelves in May, said Nintendo, though it didn t offer a precise date.

UK Man Arrested for Christmas Xbox Live and PlayStation Network Attacks

Cyber crime investigators have arrested an 18-year-old man in the UK for the attacks of the Xbox Live and PlayStation Network that took place over Christmas. This is something that Lizard Squad has claimed responsibility for, but at the moment it is not clear whether the man who has been arrested is associated with the group.

South East Regional Organised Crime Unit (SEROCU) worked in conjunction with the FBI and the UK’s National Cyber Crime Unit to home in on the unnamed man believed to have been involved in the DDoS attacks. Thousands of gamers had their Christmases spoiled after the gaming networks were rendered inaccessible, leading Sony to offer compensation to those affected.

Investigators said that cyber crime "is an issue which has no boundaries and affects people on a local, regional and global level", and that

numerous electronic and digital devices had been recovered from the man's home in Southport. While the arrest will be seen as a victory, the head of the investigating unit pointed out that there is still a good deal of work to be done.

In a statement, the crime unit said:

An 18-year-old man was arrested this morning (16/1) in Boundary Street, Southport on suspicion of unauthorized access to computer material contrary to section 1 of Computer Misuse Act 1990, unauthorized access with intent to commit further offenses contrary to section 2 of Computer Misuse Act 1990 and threats to kill contrary to Section 16 of Offenses against the person Act 1861.

The arrest is also related to swatting offenses which the unit explains is the act of providing false information to US law enforcement agencies about a threat in a particular place. This is likely a reference to the tweet from a Lizard Squad member that claimed a plane carrying a Sony executive had a bomb on board. Lizard Squad has also claimed involvement in the infamous hack of Sony.

Minecraft Breaks 12 World Records

Minecraft has broken 12 world records, according to the newly released Guinness Book of World Records 2015: Gamer's Edition.

Sure, a few of them are a bit silly (we're looking at you, Snow Golems), but others are huge, important reminders of just how much Minecraft has changed gaming in the last few years. For example, did you know Minecraft had the most popular beta ever? Or that it's the most-played Xbox Live game?

Check out the full list below.

Longest Marathon on Minecraft: 24 hours and 10 minutes, by Austrian gamer Martin Fornleitner playing on a Sony Xperia Play handset.

Best-Selling Indie Game: Not including the console versions with big publishers, Mojang has sold 16,176,201 copies on PC and Mac. Mojang's website now says that number is over 18 million.

Largest Indie Game Convention: 7500 people attended MineCon 2013.

First Country Modeled at Full Scale in a Video Game: Last year, the Danish Geodata Agency released a 1:1-scale recreation of Denmark. Yes, every building and feature of the 16,602 square mile country was accounted for. It includes four billion blocks.

Largest Real-World Place Created in Minecraft: The UK Ordinance Survey created a map of Britain and its islands using 22 million blocks to cover over 86,000 square miles of land. Each block represents 538 square feet.

Most Concurrent Players in One Minecraft World: 2,622 players crammed into a server run by YouTube channel Yogscast.

Most Popular Game Beta: Over 10 million people played the beta between December 20, 2012, and November 18, 2011.

Most Minecraft Snow Golems Built in One Minute: 70, accomplished by gamer Nachtigall Vaz.

Most-Viewed Fan Film Based on a Video Game: "'Revenge' -- A Minecraft Parody of Usher's DJ Got Us Fallin' in Love -- Crafted Using Noteblocks" by YouTuber CaptainSparklez was viewed 139,888,399 times when it earned the record.

Most-Downloaded Minecraft Project: The Dropper, a mod in which you must fall through obstacles without hitting them, has been downloaded 1,145,546 times.

Most-Played Xbox Live Game: As of May last year, Minecraft Xbox 360 players have spend 1.75 billion hours (or 199,722 years), playing the game.

Longest Journey in Minecraft: Kurt J. Mac traveled 919,592 miles for charity in Minecraft's Survival mode.

GameStop Holiday Sales Down Year-Over-Year

GameStop's total global sales during the holiday period were down 6.7% when compared to the same period in 2013.

The strength of the US dollar was blamed for part of the decline, as sales were negatively impacted by foreign currency exchange rates.

While the overall sales declined year-over-year, GameStop still reported $2.94 billion in sales during the busy holiday season. Sales of new software grew by 5.8%.

GameStop attributed growth in sales of new software to the huge jump in sales of current-gen software. Xbox One and PS4 software saw a 94% increase, yet hardware saw a decline of 32% in sales when compared to the same period in 2013.

The overall decline in sales of hardware was dialed back by an increase in sales during the month of December 2014. Sale were up 31% over the previous December.
The company's "pre-owned/value" sales category remained largely unchanged, seeing a slight increase of just 1%.

It seems that GameStop's adoption of hardware not necessarily associated with gaming, its mobile and consumer electronics category, was a wise move. That category was a bright spot for the company, with an increase of 28% in sales driven by a 75.8% rise in "Technology Brands" revenues.

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Videogame History Museum Returns to GDC with Prized Atari Exhibit

As the 2015 Game Developers Conference draws closer, organizers are pleased to confirm that attendees of the March conference can look forward to the return of the perennially popular Videogame History Museum exhibit.

After the success of last year's Nintendo exhibit, and to commemorate Warren Robinett s groundbreaking Adventure on the Atari 2600 - which he'll be deconstructing in an Adventure Classic Game Postmortem during the show - The Videogame History Museum will be building an amazing interactive exhibit within the conference hall paying tribute to the history of Atari.

Stop by the booth to check out the Museum's assorted artifacts and enjoy a chance to play Adventure on an original Atari 2600 console. See if you can find the famous microscopic dot to reveal one of the earliest video game Easter Eggs and see the message Warren hid in the game; even if you can t find the dot (it s quite microscopic, don t you know) there will be a ton of other Atari games and assorted historical materials to enjoy in the exhibit.

That's not all - conference organizers look forward to announcing many more GDC 2015 sessions and interactive exhibits in the weeks ahead. In the meantime, don't miss your chance to save money by registering for the conference early - the deadline to register for passes at a discounted rate is this month, January 21st!

Remembering The Legendary Atari Games

The congregation that laid the building blocks for the current industry we are thriving on, Atari Games are known to have changed the trend and setting of the gaming industry and made it capable of the becoming this ever changing, futuristic medium of entertainment for one and all.

Atari Games started their journey with trying their hand at arcade games thus bringing epic games such as Pong, Asteroids and Centipede which hold a special place in our childhood memories, when we spent hours together at the arcade engrossed in the seemingly endless fun these games provided. Not only did Atari master the arcade games zone in their time, they introduced the industry with the advent of home consoles which enabled players to stay and home and play the exciting games right there in the comfort of their home.

With the release of the Atari 2600, the enterprise marked the launch of the first home console in the history of the industry, this made us witness a steer the creative heads at Atari were taking to create something new, little did they know that they would be giving birth to such a big revolution that would eventually make their original creations (the arcade games) obsolete to a certain extent. The console introduced the technology of the use of a microprocessor-based hardware which at that time worked on a cartridge based storage medium.

By providing games like Combat and Pac-Man with this console , the

developers at Atari brought the sophistication of handling hardware and the facility of experiencing a gaming session at any point of time at the whim and fancy of the gamers. This console took the market by a storm when sales figures for the consoles reached one million and doubled the next year. The console also hosted the most iconic games like Space Invaders and other third party games such as Pac-Man by Namco and Activision’s Pitfall.

Since perfection had become a mandatory requirement that was expected from Atari Games the launch of the Atari 5200 with its poor design and problematic analog controllers certainly got it fair share of rebuke and disapproval from fans and critics. Especially when a launch price of $270 was associated with the console.

The reason behind this downfall was not only the technical problems they faced but also the ardent complaint from developers who left the company for Activision since they thought that their name was not being recognized with the success they were working to be attributed for.

After the committing their share of mistakes with Atari 5200, the Enterprise suffered from a loss creativity which was quite evident in the reception of their games E.T. the Extraterrestrial and Pac-Man port which deemed to be over endorsed and spoken about, in comparison to what they actually had in store for the players, the publicity of these games described them as fine pieces of art that could mesmerize the beholder when in reality it did not add up to the credibility it was assigned to its name in the promotions.

Soon, Nintendo entered the competitive grounds of the gaming world, to find the pioneers Atari in shards of despair, with launch of NES console of Nintendo the pressure on Atari tightened since they got an engaging enemy to compete against. To compete with the NES console Atari launched the Atari XEGS which was considered as the company s second major venture in regard with the console background of the enterprise.

The release of this console fell like a faint sound on the ears of a deaf man, with the global uprising that engaged in the popular use of NES console and the accommodated arrival of SEGA. Atari s XEGS couldn’t face the existing competition hence the console and its feature gathered a moot presence that eventually rendered it to be useless.

Post these events in later years Atari contributed two other consoles to the market Atari Lynx which faced defeat at the hands of Nintendo s Gameboy and the Atari Jaguar which failed on account of many hardware glitches and implementation flaws.

Over the course of time Atari seemed to have fought rough times and managed somehow to keep standing up thus maintaining its presence in the industry but in the times of despair when the company stood on the verge of bankruptcy , a new game became the deciding factor that would play a major hand in determining the fate of this enterprise.

Test Drive Unlimited 2 was the last game to be published by Atari Games, the game suffered immensely with time constraints, technical glitches and many other problems which landed the enterprise in a state of absolute turmoil . Early in 2013 Atari Games filed for bankruptcy which was indeed a sad day in the history of the gaming world.

However, we cannot ignore the fact that Atari Games did create a niche of recognition for themselves in the industry and it is their effort and

creativity that brought revolutions to our world. Thereby i would always regard them as pioneers of this industry and they will remain worthy of the title Legend in my dictionary.

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A-ONE's Headline News
The Latest in Computer Technology News
Compiled by: Dana P. Jacobson

Obama Calls for Better Cybersecurity Laws

President Obama has a new cybersecurity initiative, which he's outlining in a series of speeches this week leading up to his State of the Union address on Jan. 20. Among his proposals is a law that would require companies to disclose any security breaches within 30 days of detecting the intrusion.

In the first of these speeches, held today (Jan. 12) at the Federal Trade Commission, the president also called for laws that would protect the personal information of students, and outline a bill of rights for consumers.

Ever since the payment-card breach at Target locations just over a year ago, retail data breaches have been high on everyone's radar. But currently there's no federal law requiring companies to inform their customers of breaches in a timely manner only an uneven smattering of state laws.

Several officials, including Attorney General Eric Holder, have been calling for a federal data breach disclosure law for almost a year. Now Obama is throwing his weight behind the cause as well. Obama's proposed legislation would also make it illegal to sell customer identity data abroad, which is usually the end result of a data breach. Obama also called for consumers to have better access to credit scores.

Obama's other cybersecurity proposals include a Student Digital Privacy Act, under which personal information gathered from students in educational contexts could only be used for educational purposes, and not sold to advertising companies.

"Whether they are texting or tweeting, or on Facebook, or Instagram, or Vine, our children are meeting up, and they are growing up, in cyberspace. It is all-pervasive," said Obama in his speech today. "And Michelle and I are like parents everywhere: we want to make sure that our children are being smart and safe online. That's a responsibility of ours as parents. But we need partners."

In addition, Obama is calling on Congress to pass a legislative version of the White House's Consumer Privacy Bill of Rights, a 2012 document arguing that consumers have the right to choose when and how their personal information is used by online companies.

Tomorrow (Jan. 13), Obama will visit the Department of Homeland Security, and urge the public and private sectors to collaborate and share information pertaining to security tools and threats.

On the same day that Obama kicked off his cybersecurity initiative, a group claiming to represent ISIS took control of the US Central Command’s Twitter and YouTube channels.

Hackers Announce "World War III" on Twitter

Hackers took over the Twitter accounts of the New York Post and United Press International on Friday, writing bogus messages, including about hostilities breaking out between the United States and China.

One tweet posted under the UPI account quoted Pope Francis as saying, "World War III has begun."

Another message delivered on the Post account said the USS George Washington, an aircraft carrier, was "engaged in active combat" against Chinese warships in the South China Sea.

The tweets were subsequently deleted.

A Post tweet later noted that "Our Twitter account was briefly hacked and we are investigating."

The fake tweets were not just about war. One posted on UPI said "Just in: Bank of America CEO calls for calm: Savings accounts will not be affected by federal reserve decision."

The Post is owned by Rupert Murdoch’s News Corp.

Several media organizations have had their Twitter feeds hacked over the past two years including Agence France-Presse, the BBC and others.

A Pentagon official said the tweet about hostilities with China was "not true."

Anonymous Launches #OpCharlieHebdo, Attacks Terrorist Social Media

Anonymous-affiliated attackers claim to have taken down dozens of "Jihad sites" in retaliation for last week’s horrifying terrorist attacks in France.

Anonymous on Friday and Saturday launched #OpCharlieHebdo, releasing multiple video statements saying that defending freedom of expression has always been one of its core tenets.

One Anonymous-affiliated account has released a list of 500+ targeted Twitter accounts belonging to purported terrorists, and another has promised a list of targeted "Jihad" Facebook profiles.

In what can only be described as ironic, those wearing the Anonymous cloak are promising to "cripple" the free speech of terrorists in retaliation

for the deaths.

That’s what a masked, hooded figure with a computer-generated voice threatened as he sat in front of a desk holding a piece of paper:

We will be crippling all terrorist outlet websites and terminating all terrorist social media accounts. We will dump personal information on every terrorist we come across. We will not sleep until we bring you to your knees.

Anonymous isn’t the only entity that wants to clamp down on extremist online content.

In the wake of the attacks, several European countries - France, Germany, Latvia, Austria, Belgium, Denmark, Spain, Italy, the Netherlands, Poland, Sweden and the UK - called for a limited increase in internet censorship.

While the internet must remain "in scrupulous observance of fundamental freedoms, a forum for free expression, in full respect of the law," the nations’ interior ministers said, internet service providers (ISPs) need to help "create the conditions of a swift reporting of material that aims to incite hatred and terror and the condition of its removing, where appropriate/possible."

The UK has recently moved to block such extremist content, with its big ISPs - BT, TalkTalk, Virgin Media, and Sky - having agreed to filter such material so that people won’t read things that might induce sympathy for terrorists.

We’re not in the habit of cheering on Anonymous, and this is no exception. In this case, those claiming the Anonymous brand aren’t serving to bring terrorists to justice.

We share the outrage and sympathy for those affected by the Paris attacks, and we join Anonymous in extending our deepest condolences to victims and their survivors.

But we have to note that Anonymous is a group of people taking it upon themselves to decide what makes a target worthy of attack.

Enough of attack.

Enough.

Let the intelligence agencies use their (disturbingly well-honed) surveillance skills to go after those responsible for such horrific acts.

When A Prank Goes Wrong: Student Indicted After Hacking Rival College’s Calendar

A 21-year-old Georgia Tech student named Ryan Gregory Pickren allegedly pulled a football-rivalry prank that could wind up marking him as a felon for the rest of his life.

Georgia Tech and the University of Georgia - two universities in the US - are the arch-rivals. On 29 November 2014, they had a big game coming up.

Two days before the game, Pickren, a computer engineering student at Georgia Tech, allegedly trespassed into the University of Georgia's computer network to post a message on its online calendar.

The message:

Sat., November 29, 2014/ 12:00 pm/ Get Ass Kicked by GT.

Tom Jackson, UGA's vice president for public affairs, told the Athens Banner-Herald that the entry was discovered shortly after it was posted on Thanksgiving and taken down about an hour after it popped up.

Local police launched an investigation but didn't arrest Pickren.

However, a prosecutor submitted evidence to a grand jury, which indicted Pickren on 16 December.

He's now out after posting a $5,000 bond.

Under Georgia state law, a person is guilty of computer trespass when they alter, damage or in any way cause a computer, computer network or computer program to malfunction, regardless of how long the disruption lasts.

It's a felony offense that's punishable by a maximum of 15 years in prison and a $50,000 fine.

Does this young man really stand to serve 15 years in jail for tinkering with an online calendar as a sports-related prank?

It's highly unlikely, given that this is his first offense and judges rarely hand out maximum sentences.

When we mention maximum sentences, a large part of the rationale is to get across worst-possible case scenarios, as well as to give an idea of how seriously a given state treats a given crime.

After all, in the US maximum sentences can vary widely from state to state, and from judge to judge.

One thing that's made clear by the 15 year maximum punishment in Georgia is that the state, like many others, doesn't take computer trespassing lightly.

That's a hell of a deep stain to leave on a young man's record, all for the sake of a prank, all meant as a big raspberry over a football game.

Trespassing into networks can have catastrophic and expensive repercussions.

As a computer engineering student with a minor in computer science, he should have known better.

This kind of prank just isn't worth the lulz.

Need Some Espionage Done? Hackers Are for Hire Online

The home page of Hacker s List, a website that matches hackers with people looking for someone to delete embarrassing photos or retrieve a password.

A man in Sweden says he will pay up to $2,000 to anyone who can break into his landlord s website. A woman in California says she will pay $500 for someone to hack into her boyfriend s Facebook and Gmail accounts to see if he is cheating on her.

The business of hacking is no longer just the domain of intelligence agencies, international criminal gangs, shadowy political operatives and disgruntled hacktivists taking aim at big targets. Rather, it is an increasingly personal enterprise.

At a time when huge stealth attacks on companies like Sony Pictures, JPMorgan Chase and Home Depot attract attention, less noticed is a growing cottage industry of ordinary people hiring hackers for much smaller acts of espionage.

A new website, called Hacker s List, seeks to match hackers with people looking to gain access to email accounts, take down unflattering photos from a website or gain access to a company s database. In less than three months of operation, over 500 hacking jobs have been put out to bid on the site, with hackers vying for the right to do the dirty work.

It is done anonymously, with the website s operator collecting a fee on each completed assignment. The site offers to hold a customer s payment in escrow until the task is completed.

In just the last few days, offers to hire hackers at prices ranging from $100 to $5,000 have come in from around the globe on Hacker s List, which opened for business in early November.

For instance, a bidder who claimed to be living in Australia would be willing to pay up to $2,000 to get a list of clients from a competitor s database, according to a recent post by the bidder.

 I want the client lists from a competitors database. I want to know who their customers are, and how much they are charging them, the bidder wrote.

Others posting job offers on the website were looking for hackers to scrub the Internet of embarrassing photos and stories, retrieve a lost password or change a school grade.

The rather matter-of-fact nature of the job postings on Hacker s List shows just how commonplace low-profile hacking has become and the challenge such activity presents for law enforcement at a time when federal and state authorities are concerned about data security.

Hacking into individual email or social media accounts occurs on a fairly regular basis, according to computer security experts and law enforcement officials. In September, the Internet was abuzz when hackers posted nude photos of female celebrities online.

It is not clear just how successful Hacker s List will prove to be. A review of job postings found many that had yet to receive a bid from a hacker. Roughly 40 hackers have registered with the website, and there are 844 registered job posters. From the postings, it is hard to tell how many of the job offers are legitimate.

The site did get a favorable review recently on hackerforhirereview.com, which specializes in assessing the legitimacy of such services. The reviewer and owner of that site, who would identify himself only as Eric in emails, said he gave his top rating to Hacker s List because it s a really cool concept that limits the ability of customers and hackers to take advantage of one another.

In light of the novelty of the site, it s hard to say whether it violates any laws.

Arguably some of the jobs being sought on Hacker s List breaking into another person s email account are not legal.

The founders of Hacker s List, however, contend that they are insulated from any legal liability because they neither endorse nor condone illegal activities.

The website includes a 10-page terms and conditions section to which all users must agree. It specifically forbids using the service for any illegal purposes.
Some experts say it is not clear whether Hacker s List is doing anything wrong in serving as a meeting ground for hackers and those seeking to employ them.

Yalkin Demirkaya, president of the private investigation company Cyber Diligence, and a former commanding officer of the New York Police Department s computer crimes group, said a crackdown would depend on whether law enforcement officials saw it as a priority. He said Hacker s List may skate by because many of the people posting the ads are probably overseas.

But Thomas G. A. Brown, a senior managing director with FTI Consulting and former chief of the computer and intellectual property crime unit of the United States attorney s office in Manhattan, said hacker-for-hire websites posed problems.

Hackers for hire can permit nontechnical individuals to launch cyberattacks with a degree of deniability, lowering the barriers to entry for online crime, Mr. Brown said.

The website, which is registered in New Zealand, is modeled after several online businesses in which companies seeking freelancers can put projects out to bid. Some have compared the service to a hacker s version of the classified advertising website Craigslist. Hacker s List even has a Twitter account (@hackerslist), where it announces the posting of new hacking assignments.

Still, the three founders of Hacker s List are not willing to go public with their own identities at least not yet.

After registering with the website and beginning an email conversation, a reporter contacted one of the founders. Over a period of weeks, the founder, who identified himself only as Jack, said in a series of emails that he and two friends had founded Hacker s List and that it was based in Colorado. Jack described himself as a longtime hacker and said that his partners included a person with master s degree in business administration and a lawyer.

He said that the three were advised by legal counsel on how to structure

the website to avoid liability for any wrongdoing by people either seeking to hire a hacker, or by hackers agreeing to do a job. The company, he said, tries to do a small background check on the hackers bidding on jobs to make sure they are legitimate, and not swindlers.

We all have been friends for a while, Jack said in an email, adding that Hacker s List was kind of a fluke occurrence over drinks one night.

We talked about a niche and I built it right there, he said. It kind of exploded on us, which was never expected.

Hacker s List began its website several months after federal prosecutors and F.B.I. agents in Los Angeles completed a two-year crackdown on the hacker-for-hire industry. The investigation, called Operation Firehacker by the F.B.I., led to the filing of criminal charges against more than a dozen people across the country involved in either breaking into a person s email account or soliciting a hacker for the job.

In New York, information uncovered during the investigation in Los Angeles led to the arrest in 2013 of Edwin Vargas, a New York Police Department detective at the time, who was charged with paying $4,000 for the hacking of the email accounts of 43 people, including current and former New York police officers. Mr. Vargas, who pleaded guilty in November 2013 and was sentenced to four months in prison, said he had been motivated by jealousy and wanted to see whether any of his colleagues were dating an ex-girlfriend who is the mother of his son.

The F.B.I. investigation also involved the cooperation of the authorities in China, India and Romania, because a number of the websites where the hackers advertised their expertise were based overseas.

Still, the market for hackers, many of whom comply with the law and act more like online investigators, shows no signs of slowing. Many companies are hiring so-called ethical hackers to look for weaknesses in their networks.

David Larwson, a director of operations with NeighborhoodHacker.com, which is incorporated in Colorado, said he had seen increased demand from companies looking to make sure their employees are not obtaining sensitive information through hacking. He said in an email that companies were increasingly focused on an insider threat leading to a breach or unauthorized release of information.

On its website, NeighborhoodHacker describes itself as a company of certified ethical hackers that works with customers to secure your data, passwords and children s safety.

Microsoft, Google Tangle Over Windows Security Patch

Microsoft Corp has complained publicly about tech rival Google Inc revealing a security flaw in its Windows 8.1 system just days before Microsoft was scheduled to roll out a fix for the problem, potentially exposing users to hacking.

The spat highlights an ever-present tension in the software security sector between those who believe flaws should be revealed sooner rather

than later to put pressure on companies to tackle the issues, and developers who sometimes need more time to come up with a solution.

In this case, Google is in the former camp, through its "Project Zero" team, which scans all types of software for bugs and reports problems privately to the developers who created them. Google gives developers 90 days to fix a problem before making the issue public.

That happened on Sunday, when Google posted a security bulletin concerning weaknesses in the user profile creation process in Windows 8.1, which could allow hackers to take control of a computer. Google had initially told Microsoft about the problem on Oct. 13.

Microsoft plans to publish a fix this week as part of its regular security update, known in the industry as "Patch Tuesday."

"We asked Google to work with us to protect customers by withholding details until Tuesday, Jan. 13, when we will be releasing a fix," Microsoft executive Chris Betz wrote in a blog on the company’s site on Sunday.

"Although following through keeps to Google’s announced timeline for disclosure, the decision feels less like principles and more like a ’gotcha,’ with customers the ones who may suffer as a result."

Microsoft Has Ended Free Tech Support and Feature Updates for Windows 7

Unlucky for some: It s January 13, 2015, and that means the end of free support for Windows 7.

That doesn t mean your computer is going to automatically stop working, but it does mean Microsoft will no longer offer free help and support if you have problems with your Windows 7 software from this point on. No new features will be added, either.

Microsoft is keen to move users onto Windows 8 instead to find out more, check out our how-tos, troubleshooting, news and reviews of Windows 8. Alternatively, you can wait for Windows 10 later this year.

Windows 7 was released in 2009. It sold over 100 million copies in six months and remains hugely popular. More stable than predecessor Windows Vista and more familiar than its radically redesigned successor Windows 8, version 7 is still estimated to be running half the world s PCs.

As of today, Windows 7 has moved from mainstream support free help for everyone to extended support, which means Microsoft will charge for help with the software. That will end in 2020, when Microsoft turns out the lights on Windows 7 for good.

If you re worried about security, Microsoft will continue to patch security issues, so if you do stick with Windows 7, your computer shouldn t suddenly become vulnerable to hackers targeting the software.

The next generation of Microsoft s venerable operating system is Windows 10 it s skipping 9, for some reason which is due in the second half of this year. Microsoft is set to make an announcement about

Windows 10 a week from now on 21 January, so stick with us to find out what Gates mates have up their sleeves.

The Leap Second Is About To Rattle The Internet. But There s A Plot To Kill It

The Qantas Airways computers started crashing just after midnight. A few hours later, as passengers started flying home from weekend getaways, there were long delays in Brisbane, Perth, and Melbourne, and the computers still didn t work. Qantas flight attendants were forced to check passengers in by hand.

That Sunday morning in July 2012 was a disaster for Amadeus IT Group, the Spanish company responsible for the software that had computer screens flickering at Qantas kiosks. But it wasn t entirely the company s fault. Most of the blame lay with an obscure decades-old timing standard for the UNIX operating system, a standard fashioned by well-intentioned astronomer time lords. They were working for an international standards body, a precursor of the International Telecommunications Union, which today officially tells clock-keepers how to tell the rest of the world what time it is. Back in 1972, they decided to insert the occasional leap-second into Coordinated Universal Time (UTC), the standard most of the world uses to set wristwatches.

We ve had 25 of these leap seconds since then, and we re about to get our 26th. This week, the modern time lords announced that the next leap second will arrive at 11:59 pm and 60 seconds on June 30. That has some computer experts worried. Amadeus wasn t the only company to go glitchy during the last leap-second. Reddit, Foursquare, and Yelp all blew up thanks to the leap second and the way it messed with the underlying Linux operating system, which is based on UNIX.

The trouble is that even as they use the leap second, UNIX and Linux define a day as something that is unvarying in length. If a leap second happens, the operating system must somehow prevent the applications from knowing that it s going on while still handling all the business of an operating system, says Steve Allen, a programmer with California s Lick Observatory. He likens it to the problem facing the HAL 9000, the fictional onboard computer in Stanley Kubrick s 2001: A Space Odyssey, which loses its mind after it is programmed to lie. All the problems that crop up are, in a metaphorical sense, the HAL 9000 problem. You have told your computer to lie. I wonder what it will do, he says.

The Linux kernel folks aren t expecting any major issues when July 1 comes around, but the situation is unpredictable. Back in 2012, Linux creator Linus Torvalds told us: Almost every time we have a leap second, we find something. And this time around, there will be problems again. Torvalds doesn t think they ll be as widespread as they were three years ago, but they re largely unavoidable. The reason problems happen in this space is because it s obviously rare and special, and testing for it in one circumstance then might miss some other situation, he says.

As a result, some insiders are trying to abolish the leap second, in favor of more reliable system. But they may or may not succeed. Yes, we already have atomic clocks that don t need leap seconds, and some standard time systems already use these clock. GPS has worked off of atomic clocks for decades, leap-second free. But some believe UNIX and Linux, its

ultra-popular clone, should continue to get their time from the leap-second-friendly UTC standard. They want man and machine to remain in line.

You can think of the whole mess as a kind of cosmic struggle between machines, which consider a day to be 86,400 seconds, and humans, who think of a day as one spin of Planet Earth. For thousands of years, one rotation of the earth was indeed the best way of measuring 86,400 seconds, but it turns out this is an imperfect method.

The moon s gravitational pull on the earth s water messes with things. So do earthquakes. In fact, there are many factors that can slow up or speed up the earth s spin, much like an ice skater extending and pulling back her arms.

If the world moved completely to atomic clocks, then after tens of thousands of years, noon would fall in the middle of the night. And long after that, spring would be the season, here in the US, that starts in November.

Switching to something like the GPS system seems like an obvious way around this. Let the computers have their crazy time and leave UTC for human wristwatches. But things aren t quite so simple. Some think abandoning UTC would lead to more time-translation problems. And because so many computers are already hard-coded to use the UTC standard, weaning them from it would be a big and nasty piece of coding work. It would just cause other problems instead, Torvalds says. Many worse problems.

With the next leap second looming, some of our current day time lords are looking to abolish the whole idea at the next meeting of the International Telecommunications Union, the group that responsible for UTC. The leap second question has been openly debated for 15 years, but this November, it will come to a head at the 2015 World Radiocommunication Conference in Geneva, according to Wayne Whyte, a NASA program manager who chairs the group that s studying whether to drop the leap-second.

Will it get passed? Nobody knows for sure, but people who follow the time war say that some members of the ITU really don t like the idea. It s a really complicated issue, says Marek Kukula, the public astronomer with the Royal Observatory Greenwich. Some of the contributing factors are cultural and emotional, he says.

Kukula wouldn t be surprised to see the debate tabled for another decade or two. My impression is that they re not desperate to come to a conclusion, he says. And in their position, I totally understand how they feel.

None of this will be much use to Udo Seidel, over at Amadeus Software. The ITU meeting doesn t happen until months after the June leap-second, so he s quietly building out a set of test tools that allow system administrators to simulate the leap-second effect and see if everything crashes.

Seidel was working at Amadeus back in 2012 when it systems crashed, so he s probably one of the first people you d expect to call for is abolition. But when I ask him what he thinks, he grows thoughtful on the phone. Whimsical, even.

We should keep the earth and its computers in alignment he tells me. To

him, it just feels like the right thing to do. And besides, he s a technologist. If we cannot manage to make our systems handle a leap second, he says, then we have bigger problems.

Google s Latest Invention Is Fantastic and A Little Scary

Google on Tuesday was granted an interesting new patent that describes a highly advanced piece of Internet browsing technology that might also be a bit scary to some extent, as it only proves how powerful the company s artificial intelligence will become.

U.S. Patent No. 8,935,798, called Automatically enabling private browsing of a web page, and applications thereof, describes means for a computer to automatically enable private browsing on a webpage when it determines that the page s content might require more privacy.

That would mean that all a user has to do to surf the web privately would be to simply start loading the desired pages, at which point the browser, likely Google s Chrome browser, would switch on private mode when certain content is detected.

The method seems harmless enough, and appears to be helpful, as the user would not have to constantly remember to protect his or her privacy by selecting incognito mode. Private browsing prevents other sites from collecting some user data, and stops the browser from recording browsing history, though ISPs and anyone else monitoring traffic would still be able to see what pages a user has visited incognito.

At the same time, Google s main revenue source is advertising, with the company trying to best profile its customers in order to target them with suitable ads. With that in mind, it s not clear what kind of data Google would still collect from users once such an invention is in place.

After all, from the looks of it, private mode is only enabled after a user enters a URL in the browser, so in theory, Google would still be able to record that particular site visit and link it to a user s profile for future ads. Google wouldn t even have to keep track of everything the user is doing once private mode is enabled, as it could simply keep track of the kind of sites a user is likely to view in incognito mode.

On the other hand, this is just a patent for the time being, and the technologies described in it might never be used. Furthermore, it s likely Google would thoroughly explain this new privacy-enhancing feature before it s actually deployed in future Chrome browser versions for desktop or mobile.

Windows 10, Chrome OS Battle Royale To Benefit PCs This Year

Laptops with Microsoft s Windows 10 will be in a heavyweight bout with Chromebooks for market dominance later this year, but no matter who wins, PC shipments will benefit from the clash.

Worldwide PC shipments are expected to decline by a lower-than-expected rate of 3.3 percent this year, and fall by just 1.8 percent in 2016, as

Windows 10 and Chromebooks help stop years of bleeding in the PC market, IDC said on Monday. Shipments declined by 4.7 percent last year when compared to 2013.

The release of Windows 10 could appeal to businesses that want to upgrade PCs but passed on the maligned Windows 8, said Jay Chou, senior research analyst at IDC.

Windows 10 addresses many of the complaints aimed at Windows 8, and its preview version has received positive reviews, Chou said.

The OS could do well in the U.S. market, but it s hard to project if consumers will immediately upgrade PCs, Chou said.

A lot depends on whether Microsoft offers the OS as a free upgrade or charges for the OS. If Windows 10 is free, people may choose not to upgrade hardware, Chou said.

Lenovo and Dell have already issued ringing endorsements for Windows 10, saying customers are anxious to upgrade to the new OS especially after the controversial Windows 8. One of the appeals is the return of the Start menu, and a stronger focus on the desktop.

Microsoft has the home court advantage, with the installed base, Chou said. If Microsoft can help PCs be price competitive, then there is this home-court advantage to maintain Windows share.

But Windows 10 faces a challenge from Chromebooks, which are low-cost laptops with Google s Chrome OS. Chromebooks are gaining strength, and helped PC shipments during the fourth quarter last year. Chromebooks were popular with students and consumers during the holiday shopping season, and will increase their appeal as more people move to Web-based computing.

Worldwide PC shipments totaled 80.8 million units during the fourth quarter, declining by just 2.1 percent compared to the same quarter last year. Of all PCs, laptops accounted roughly 50 to 55 percent of all shipments, of which 4 to 6 percent were Chromebooks.

Many Chromebooks cost under $250 and are packed with features, which makes them attractive, Chou said.

A lot of times the build quality is better than the netbooks we saw years ago, Chou said.

Microsoft is trying to battle Chrome OS through a series of low-cost laptops and desktops that run on Windows 8 with Bing, which is licensed at no cost to PC makers. The low-cost laptops have minimal storage and are mostly for people who don t need heavy computing resources, and mostly use them to surf the web, do social media and store files online. HP sells Windows-based Stream laptops and an all-in-one starting at under US$200.

It remains to be seen how Microsoft adapts Windows 10 to battle Chrome OS. Microsoft is expected to share more details about Windows 10 at a January 21 event on its Redmond, Washington, campus.

But no doubt, a strong end to 2014 has set the tone for a better PC market this year. Lenovo was the world s top PC vendor during the fourth quarter last year, shipping 16.05 million units, up by 4.9 percent compared to the same quarter in 2013. HP came close to regaining the top spot it

previously held, shipping 15.88 million units and growing by 15.1 percent. In third place was Dell, shipping 10.88 million units, an 8.5 percent increase. A rebounding Acer grew its shipments by 3.2 percent to reach 6.22 million units. Apple was the world s fifth largest PC vendor during the quarter, shipping 5.75 million units, up by 18.9 percent. Asustek was bumped out of the top five list during the quarter.

Google Glass Is Not Dead

Google ending its Glass Explorer program yesterday sparked a round of eulogies for the oft-ridiculed face computer. That s premature at best. In its current form, Glass is undoubtedly dead, but there s no reason to believe Google won t relaunch it with a new version in the coming month likely around its annual I/O developer conference.

Despite plenty of early hype and generally positive coverage, Glass turned into a public relations issue for Google the day it went on sale. Google, which is typically quick to cancel failing projects, decided to stoically sit this one out.

Now, Glass is becoming its own business unit inside of Google, Tony Fadell will oversee the program, and sales to businesses, developers and schools will continue. Google is also encouraging developers to continue writing apps for the platform. Those are not signs that Google plans to cancel the platform. With Fadell in charge, I doubt Google will only focus on business use cases. Fadell doesn t do enterprise.

The official line from Google is that the team learned what it could from the Explorer Program and is now working on the next version of Glass, which will launch whenever it s ready. There are plenty of reasons to be cynical about this, but so far, Google s actions indicate that it plans to do exactly what it says it will.

Sure, the current Explorer Program is done, but how many units was Google actually still selling through that? One a week? When Google opened Glass sales to everybody, there was barely a reaction. Also, the hardware was badly due for a revision anyway. It was already outdated the day Glass launched and over the almost two years it was on sale, it only received minor updates. Software updates stopped a few months ago, too.

Since Google launched Glass, it has hopefully learned how to market it better that is, without this kind of limited Explorer program that only exasperated the myths.

With its investment in Magic Leap, Google now also has access to what looks to be pretty revolutionary augmented-reality technology. Combine that with all of the other tech we ve seen over the last two years and everything else the Glass team hopefully learned (including how not to market it) and the next version could actually be much more interesting.

Depending on what Google does, the next version of Glass could easily become a colossal failure. If it s only better hardware with some software improvements, reactions will be the same. By keeping the old Glass on the market for as long as it did, Google only perpetuated the negativity around it until it became mainstream. That may be the biggest challenge for Glass 2.0 that and Robert Scoble liking it.

Newly Unearthed Emails Show Apple Knew Google Glass Was Going To Flop from Day 1

It s been a couple of years since Google first started showing off Google Glass to the world, and in that time we have never heard any rumor that Apple was working on a device to compete with the digital headset. And now a new report from Business Insider may explain why: One of Apple s most important executives seemingly thought it would be a bomb from the start.

Business Insider has obtained some emails that were sent by Apple marketing chief Phil Schiller to tech blogger Abdel Ibrahim of The Tech Block after reading one of his posts making fun of Google Glass.

I can t believe they think anyone (normal) will ever wear these things, Schiller wrote. It reminds me of the push to market video goggles a few years back.

There are many, many reasons Google Glass has a very big public image problem and one of them is definitely how awkward the device makes people look while they re wearing it. The other issue was that many people felt uncomfortable around people wearing Glass because they were always worried they were being secretly filmed by the device.

At any rate, if or when Google comes out with a second-generation model, we imagine it s going to look a lot different than the dorky Borg-like headset it first showed off in 2012.

Apple’s New Programing Language Swift Is ’Swiftly’ Growing

Apple’s new programming language Swift, has skyrocketed since its release last year, suggests a new report.

The new programming language, launched as an alternative to Objective-C is already the 22nd most popular language. The report from analyst firm RedMonk noted that the Swift’s new spot is up 46 spots from three months ago.

"Growth like that is "unprecedented" in the firm’s four years of ranking programming languages," said RedMonk analyst Stephen O’Grady.

"When we see dramatic growth from a language it typically has jumped somewhere between five and 10 spots, and the closer the language gets to the Top 20 or within it, the more difficult growth is to come by," he noted.

The rankings have been determined based on a correlation of language discussions on Stack Overflow and language usage on GitHub.

Java and JavaScript remained at the first two spot respectively, followed by PHP, Python, C#, C++, Ruby, CSS, C and Objective-C.

"The most important takeaway is that the language frequently written off

for dead and the language sometimes touted as the future have shown sustained growth and traction and remain, according to this measure, the most popular offerings," O'Grady added.

Could MySpace Make A Mini Comeback?

Today the question heard around the (tech) world: MySpace is still a thing?

The Wall Street Journal reported that MySpace s user numbers are actually growing, years after it became the overlooked stepsister of the social media world. The site saw 575 percent growth in unique users in the last year. Of course, 525 percent of 0 is still 0, so to prove its thesis the WSJ cited a surprising statistic: MySpace still has 50 million monthly active users.

It looks like MySpace is making a mini comeback kind of. There s one caveat to the user data: A big chunk of the company s monthly actives come on Thursdays due to the popularity of Throwback Thursday, the social media phenomenon where people post old pictures of themselves under the hashtag #tbt. Former Myspace fans crack open their childhood digital vault to find the goods. Members of the tech media probably did the same today after seeing the WSJ story. Proud to say I remembered my high school email (ringringeksie@hotmail.com .don t ask) and password in one go.

MySpace s resurgence can t be entirely chalked up to the #tbt craze. Tim Vanderhook, the CEO of MySpace parent company Viant Inc., said that young people in the 17 to 25 age demographic are using it regularly. They watch enough videos on the site to make MySpace the 16th most popular online video provider according to Comscore. The social site started as a place for music and entertainment creators and fans to connect, so that still represents the bulk of the activity.

MySpace s new site focuses on delivering video and music.

Given that MySpace was once the queen bee of social, the company still has 1 billion users registered across the world, information that advertisers want to get their hands on. The company has partnered with undisclosed online media companies and advertisers to do some type of cross referencing of user information, to see whether online ads actually convert to sales.

It s unlikely the company will ever near the heights of its former glory, but that doesn t mean it couldn t reestablish itself as a tool for a particular sect of music-loving youth. From the sounds of it, Viant Inc. is eking every potential drop of profit it can. The believed-to-be-defunct service lives on; perhaps a shadow of its former self, but still very much alive.

MySpace Tom, who left the company long ago under NewsCorp s failed reign, now spends his days traveling the world instagramming beautiful, albeit seemingly photoshopped, shots of cultural and natural landmarks. I ve reached out to him to hear his thoughts on MySpace s small resurgence, and I ll update this if I hear back.

Facebook at Work Launches So You Can Never Not Be on Facebook

Facebook is doing everything it can to monopolize your time online, ramping up efforts in video, messaging, and news, among other media. Now it s unveiling a whole new portal that officially acknowledges what you already do anyway: spend all your time at work on Facebook. Called Facebook at Work, the service announced Wednesday works pretty much just like regular Facebook, except you use it to connect to colleagues who may or may not be friends. Most important of all, the color scheme is different, which lets your boss looking over your shoulder know that, even though you re on Facebook, you re still working.

For now, Facebook says it s making Facebook at Work available to a handful of partners, who will be testing the product ahead of its full-blown launch, tentatively slated for later this year. Facebook itself says it s been using Facebook at Work internally for years.

 We have found that using Facebook as a work tool makes our work day more efficient, Lars Rasmussen, Facebook s director of engineering, tells WIRED. You can get more stuff done with Facebook than any other tool that we know of, and we d like to make that available to the whole world.

 Efficiency and spending time on Facebook at work may sound like a contradiction in terms. But if Facebook can actually make a tool that helps people get things done at the office, the company will have succeeded in finding a way to command even more of your screen time, especially if you re not constantly worrying about minimizing that window. Facebook makes money when you see and click ads on the site, whether you re at work or at home. The more time your eyes are on Facebook, the more of your attention it can monetize.

The way Rasmussen explains it, Facebook at Work has the same look, apps, and tools as the Facebook we ve seen before. It will exist as a separate portal on the desktop, as well as on separate apps for iPhones and Android devices. A mobile Web version will also be available. The only thing that looks different is the color scheme of Facebook at Work s interface, which is shaded white instead of Facebook s trademark blue making it easy for employers to tell whether you re on personal Facebook or Facebook at Work with a glance.

Other than that, the same familiar features are all in place, including News Feed, Search, Groups, Events, Messenger, and photo and video sharing functions. But you ll have a separate Facebook identity specifically for sharing with colleagues. According to Rasmussen, you don t actually have to have a personal Facebook account at all to use Facebook at Work if your company decides to sign up for the service.

Facebook at Work will revolve around colleagues in much the same way that regular Facebook revolves around family and friends. For example, your News Feed will populate with posts shared by the coworkers who you already interact with the most, Rasmussen says. The posts that see more shares will spread further, until the entire company might see it.

For Facebook, a move into enterprise makes a whole lot of sense as it seeks new avenues for expansion. Facebook s monthly active user base stands at 1.35 billion, according to the company, but growth has slowed as the addressable market of users not already on Facebook dwindles. Work is one place Facebook still has not reached out to potential users,

at least not officially.

Once users do sign up, however, they are by far the most engaged compared with any other social network. According to a recent Pew Research survey, 70 percent of them logged on daily, a significant increase from the 63 percent who did so in 2013. This suggests that, with 52 percent of online adults using some kind of social media site, Facebook still acts as a kind of online home base for many.

Still, unlike a plethora of work-themed social networking tools including LinkedIn, Salesforce s Chatter, Microsoft s Yammer, and the popular messaging tool Slack Facebook has been harder for its users to justify using at the office. Even Rasmussen acknowledges the problem. Some people are less comfortable than others using their personal Facebook in the work context, he says. With Facebook at Work, you get the option of completely separating the two.

With so many Web services competing for people s attention, both at home and at work, Facebook really has no choice but to head to the office. The company has shown a peerless ability to fuse people s personal lives and online lives. If it can do the same for our work lives, that s at least eight more hours we spend glued to Facebook. Which is exactly what Facebook hopes we ll do.

The 8080 Chip at 40: What’s Next for The Mighty Microprocessor?

It came out in 1974 and was the basis of the MITS Altair 8800, for which two guys named Bill Gates and Paul Allen wrote BASIC, and millions of people began to realize that they, too, could have their very own, personal, computer.

The Altair 8800, based on the Intel 8080, was the first commercially successful home hobbyist PC.

Now, some 40 years after the debut of the Intel 8080 microprocessor, the industry can point to direct descendants of the chip that are astronomically more powerful (see sidebar, below). So what’s in store for the next four decades?

For those who were involved with, or watched, the birth of the 8080 and know about the resulting PC industry and today’s digital environment, escalating hardware specs aren’t the concern. These industry watchers are more concerned with the decisions that the computer industry, and humanity as a whole, will face in the coming decades.

While at Intel, Italian immigrant Fredericco Faggin designed the 8080 as an enhancement of Intel’s 8008 chip - the first eight-bit microprocessor, which had debuted two years earlier. The 8008, in turn, had been a single-chip emulation of the processor in the Datapoint 2200, a desktop computer introduced by the Computer Terminal Corp. of Texas in late 1970.

Chief among the Intel 8080’s many improvements was the use of 40 connector pins, as opposed to 18 in the 8008. The presence of only 18 pins meant that some I/O lines had to share pins. That had forced designers to use several dozen support chips to multiplex the I/O lines on the 8008, making the chip impractical for many uses, especially for hobbyists.

"The 8080 opened the market suggested by the 8008," says Faggin.

As for the future, he says he hopes to see development that doesn't resemble the past. "Today's computers are no different in concept from the ones used in the early 1950s, with a processor and memory and algorithms executed in sequence," Faggin laments, and he'd like to see that change.

He holds out some hope for the work done to mimic other processes, particularly those in biology. "The way information processing is done inside a living cell is completely different from conventional computing. In living cells it's done by non-linear dynamic systems whose complexity defies the imagination - billions of parts exhibiting near-chaotic behavior. But imagine the big win when we understand the process.

"Forty years from now we will have begun to crack the nut - it will take huge computers just to do the simulations of structures with that kind of dynamic behavior," Faggin says. "Meanwhile, progress in computation will continue using the strategies we have developed."

Nick Tredennick, who in the late 1970s was a designer for the Motorola 68000 processor later used in the original Apple Macintosh, agrees. "The big advances I see coming in the next four decades would be our understanding of what I call bio-informatics, based on biological systems," he says. "We will start to understand and copy the solutions that nature has already evolved."

Carl Helmers, who founded Byte magazine for the PC industry in 1975, adds, "With all our modern silicon technology, we are still only implementing specific realizations of universal Turing machines, building on the now nearly 70-year-old concept of the Von Neumann architecture."

How we will interface with computers in the future is of more concern to most experts than is the nature of the computers themselves.

"The last four decades were about creating the technical environment, while the next four will be about merging the human and the digital domains, merging the decision-making of the human being with the number-crunching of a machine," says Rob Enderle, an industry analyst for the past three decades.

Moore's Law (as predicted by Gordon Moore, Intel's co-founder, in 1965), says that the number of components that can be put on a chip at the same price can be expected to double every two years. Since the first commercialized 8-bit microprocessor was introduced in 1974 there has been time for 20 doublings, generating a growth factor of 1,048,576.

Examining one of the latest high-end descendants of the 8080, the Intel Core i7-5960X, shows that growth has indeed been massive, but not equal for all specs. For example, memory has indeed gone up by a factor of a million, from 64KB to 64GB. But the number of transistors on the processor itself has gone up by a factor of 433,333, from 6,000 to 2.6 billion.

Clock speeds in modern chips have been limited by heat-dissipation problems, and the 3GHz clock speed of the latest processor is 1,500 times the 2MHz speed of the 8080.

The i7-5960X has eight cores, whereas the 8080 had only one (itself). The 8080 required about four clock cycles to perform a machine-level

instruction, for performance of about 500,000 instructions per second. The rule of thumb today is four instructions per cycle, giving the i7, with eight cores, performance of 96 billion instructions per second, or 192,000 times more than the 8080.

Of course, additional factors like memory speed and capacity, storage speed and capacity, large on-chip memory caches, and the inclusion of graphics and audio processors also increase the capacities of modern systems.

Meanwhile, the 8080’s 1974 retail price was $360, which (with inflation) would be $1,740 today. The initial single-unit price of the i7-5960X in 2014 was $1,059, a reduction of nearly 40%.

The next four decades could theoretically produce another 20 doublings, leading to another improvement factor of roughly 200,000, producing a device roughly 40 billion times more powerful than the original 8080. In 40 years’ time, the chip could cost (in 2014 dollars) about $635. More than likely, though, points of diminishing returns will be encountered, as is already the case with clock speeds, causing the industry to adopt one or more alternate architectures, as some experts predict.

This merging will involve people learning how to perform direct brain control of machines, much as they now learn to play musical instruments, predicts Lee Felsenstein. He helped design the Sol-20 (one of the first 8080-based hobbyist machines) and the Osborne 1, the first mass-market portable computer.

"I learned to play the recorder and could make sounds without thinking about it - a normal process that takes a period of time," he notes. Learning a computer-brain interface will likewise be a highly interactive process starting in about middle school, using systems that are initially indistinguishable from toys, he adds.

"A synthesis of people and machines will come out of it, and the results will not be governed by the machines nor by the designers of the machines. Every person and his machine will turn out a little different, and we will have to put up with that - it won’t be a Big Brother, one-size-fits-all environment," Felsenstein predicts.

"An effortless interface is the way to go," counters Aaron Goldberg, who heads Content 4 IT and has been following the technology industry as an analyst since 1977. "Ideally it would understand what you are thinking and require no training," considering the computational power that should be available, he adds.

"Interaction with these devices will be less tactile and more verbal," says Andrew Seybold, also a long-time industry analyst. "We will talk to them more and they will talk back more and make more sense. That’s either a good thing or a scary thing."

Some observers believe increasingly powerful computers could bring problems.

"In the next four decades the biggest issue is what happens when devices become smarter, more capable and more knowledgeable than we are," says Goldberg. "If you follow the curve we will clearly be subordinate to the technology. The results could be terrifying, or empowering. There may always be tension between the two. Much as it has been thrilling to live in this generation, the next should be really exciting - but the

problems will also be much bigger."

"There’s a lot of concern that we are developing the race that will replace us," adds Enderle, fears that have been articulated by scientists and others, from tech entrepreneur Elon Musk to renowned physicist Stephen Hawking. "We could create something so smart that it could think that it would be better off without us," Enderle adds. "It would see that we’re not always rational and fix the problem, either by migrating off-planet as many hope, or by wiping out the human race."

Not everyone agrees with the doomsday scenario. "I am a meliora conservative regarding computer technology’s future," counters Byte magazine’s Helmers. (Meliora is Latin for "ever-better," and it is the motto of Helmers’ alma mater, the University of Rochester.) "Given another 40 years of creative engineering minds building on the vast past achievements of prior creative minds, our technology will be meliora to the nth degree."

Either way, "The CPU is only a small part of the problem these days; it’s what we do with it that’s the problem," adds Bob Frankston, who co-invented VisiCalc, the first PC "killer app," in 1978.

"You will have the equivalent of Watson in your wristwatch or embedded inside you - what will you then want to do?" wonders Jonathan Schmidt, one of the designers of the Datapoint 2200. Watson is the name of the IBM artificial intelligence entity famous for winning the TV quiz show "Jeopardy!" against two human champions in 2011.

Ted Nelson, who invented the term hypertext in the 1960s and whose still-unrealized Project Xanadu has many features in common with the later World Wide Web, pretty much rejects both the past and the future. "Advances? It has all turned to crap and imprisonment," he says. As for the next four decades, "More crap, worse imprisonment." (Nelson’s Xanadu would give all users file access, including editing privileges. Users on today’s Web can do only what a specific site lets them do.)

Some experts have predicted, or called for, specific advances. For example, Stan Mazor, who as a chip designer at Intel was involved in the 8008, says machine vision may be the next frontier.

"When computers can see, we will have a large leap forward in compelling computer applications," says Mazor. "Although typical multiprocessors working on a single task saturate at around 16 CPUs, if a task can be partitioned, then we might see 100,000 CPUs on a chip. Vision’s scene analysis might be one of those problems suitable for large-scale parallelism."

"Why can’t we use the computing power we have available today to make computers communicate with humans more efficiently, without the need for programming languages, operating systems, etc?" asks Marcian E. "Ted" Hoff, who was Mazor’s boss at Intel during the 8008 project. "There has been insufficient progress in natural language processing, a disappointment I hope will be remedied."

"I am a bit concerned about the whole cloud thing," Hoff adds. "Consider that the delay due to a few inches of wire between a CPU chip and its memory now corresponds to several [CPU] instructions. Local storage has never been cheaper. And yet we are planning to move our data miles and miles away, where its security is questionable, and the time to reach it is several orders of magnitude longer than with local storage. And

consider the bandwidth requirements."

Nick Tredennick, a former design engineer at Motorola who worked on the MC68000 microprocessor and a co-founder of chip-maker NexGen, calls for hardware that is configurable according to the needs of the software. "We need to make the hardware accessible to programmers, not just logic designers. I predicted that years ago, but it did not happen." He foresees that micro-electromechanical systems (MEMS) combined with the Internet of Things should lead to buildings and bridges that can report when they are stressed and otherwise need maintenance.

As for the cumulative future result of the rising tide of computer power, "I don’t think it will be world peace, or a human lifespan of 300 years," says Frankston. "Whatever it is, it will be the new normal, and people will complain about ’kids these days.’"

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